What is claimed is:

1. A rewritable optical recording medium comprising a substrate having a wobble groove, and a phase-change recording layer, wherein a crystal state of the recording layer is an unrecorded or erased state and an amorphous state of the recording layer is a recorded state, and amorphous marks corresponding to the recorded state are formed by recording light,

after an EFM-modulated signal is recorded by an overwriting operation ten times in the recording layer at an the 8-times velocity V as high as eight times of a reference velocity (1-times velocity) V_1, which is a linear velocity of 1.2 m/s, with a data reference clock period T retained so as to satisfy $VT=V_1T_1$ (where T_1 is 231 ns) under one selected from various conditions of the following recording method 1:

a modulation m_{11} of an eye pattern of the recorded signal obtained as retrieved at the 1-times velocity is 60-80%,

a topmost level R_{top} of reflectivity of the eye pattern of the recorded signal obtained as retrieved at the 1-times velocity is 15-25%, and

a jitter of the individual length of marks and inter-marks obtained as retrieved at the 1-times velocity are equal to or less than 35 ns; and

said recording method 1 is carried out by exposing the

recording layer to recording light of a 780 nm wavelength via an optical system whose numerical aperture (NA) is 0.55 or 0.5, with the time length of the individual amorphous mark being nT (n is an integer within a range of from 3 through 11), in the following manner:

during that time, erasure power Pe, which is able to crystallize the individual amorphous-state portions, irradiates inter-mark portions between the individual recorded marks,

for the recorded marks, the time length (n-j)T is divided into α_1T, β_1T, α_2T, β_2T, ..., α_mT, β_mT (where m=n-1, $\alpha_1=1.0$, $\alpha_i=0.5$ (i is an integer selected from 2 through m), $\beta_m=$ from 0.25 to 0.75, $\alpha_i+\beta_{i-1}=1.0$ (i is an integer within a range of from 2 to m)) in this sequence so as to satisfy $\Sigma_i(\alpha_i+\beta_i)=n-j$ (j is a real number within a range of from 0 to 2.0),

within the time length α_iT (i is an integer within a range from 1 to m), the recording light, whose record power Pw is enough to melt said recording layer, irradiates the recording layer (where Pw is 14 to 25 mW and Pe/Pw=0.5), and

within the time length β_iT (i is an integer within a range of from 1 to m), the recording light of bias power Pb of 0.8 mW irradiates to the recording layer.

2. A rewritable optical recording medium comprising a substrate having a wobble groove, and a phase-change

recording layer, wherein a crystal state of the recording layer is an unrecorded or erased state and an amorphous state of the recording layer is a recorded state, and amorphous marks corresponding to the recorded state are formed by recording light

after an EFM-modulated signal is recorded by an overwriting operation ten times in the recording layer at a 10-times velocity V as high as 10 times of a reference velocity (1-times velocity) V_1, which is a linear velocity of 1.2 m/s, with a data reference clock period T retained so as to satisfy $VT=V_1T_1$ (where T_1 is 231 ns) under one selected from various conditions of the following recording method 1',

a modulation m_{11} of an eye pattern of the recorded signal obtained as retrieved at the 1-times velocity is 60-80%,

a topmost level R_{top} of reflectivity of the eye pattern of the recorded signal obtained as retrieved at the 1-times velocity is 15-25%, and

a jitter of the individual length of amorphous marks and inter-marks obtained as retrieved at the 1-times velocity are equal to or less than 35 ns; and

said recording method 1' is carried out by exposing the recording layer to recording light of a 780 nm wavelength via an optical system whose numerical aperture (NA) is 0.55 or 0.5, with the time length of the individual amorphous mark being nT (n is an integer within a range of from 3 to

11), in the following manner:

during that time, erasure power Pe, which is able to crystallize the individual amorphous-state portions, irradiates inter-mark portions between the individual recorded marks,

for the recorded marks, the time length (n-j)T is divided into α_1T, β_1T, α_2T, β_2T, ..., α_mT, β_mT (where m=n-1, $\alpha_1=1.0$, $\alpha_i=0.5$ (i is an integer within a range of from 2 to m), $\beta_m=$ from 0.25 to 0.75, $\alpha_i+\beta_{i-1}=1.0$ (i is an integer within a range of from 2 to m)) in this sequence so as to satisfy $\Sigma_i(\alpha_i+\beta_i)=n-j$ (j is a real number within a range of from 0 to 2.0),

within the time length α_iT (i is an integer within a range of from 1 to m), the recording light, whose record power Pw is enough to melt said recording layer, irradiates the recording layer (where Pw is 14 to 25 mW and Pe/Pw=0.5), and

within the time length β_iT (i is an integer within a range of from 1 to m), the recording light of bias power Pb of 0.8 mW irradiates the recording layer.

3. A rewritable optical recording medium according to claim 1 or 2, wherein

after an EFM-modulated signal is recorded by an overwriting operation ten times in the recording layer at a 4-times velocity V as high as 4 times of a reference velocity (1-times velocity) V_1, which is a linear velocity

of 1.2 m/s, with a data reference clock period T retained so as to satisfy $VT=V_1T_1$ (where T_1 is 231 ns) under one selected from various conditions of the following recording method 2,

a modulation m_{11} of an eye pattern of the recorded signal obtained as retrieved at the 1-times velocity is 60-80%,

a topmost level R_{top} of reflectivity of the eye pattern of the recorded signal obtained as retrieved at the 1-times velocity is 15-25%, and

a jitter of the individual amorphous marks and inter-marks obtained as retrieved at the 1-times velocity are equal to or less than 35 ns;

said recording method 2 is carried out by exposing the recording layer to recording light of a 780 nm wavelength via an optical system whose numerical aperture (NA) is 0.55 or 0.5, with the time length of the individual amorphous mark being nT (n is an integer within a range of from 3 to 11), in the following manner:

during that time, erasure power Pe, which is able to crystallize the individual amorphous-state portions, irradiates inter-mark portions between the individual recorded marks,

for the recorded marks, the time length (n-j)T is divided into α_1T, β_1T, α_2T, β_2T, ..., α_mT, β_mT (where m=n-1, $\alpha_1=1.0$, α_i= from 0.3 to 0.6 (i is an integer within a range of from 2 to m), β_m= from 0.25 to 0.75, $\alpha_i+\beta_{i-1}=1.0$ (i is an

integer within a range of from 2 to m)) in this sequence so as to satisfy $\Sigma_i(\alpha_i+\beta_i)=n-j$ (j is a real number within a range of from 0 to 2.0),

within the time length $\alpha_i T$ (i is an integer within a range of from 1 to m), the recording light, whose record power Pw is enough to melt said recording layer, irradiates the recording layer (where Pw is 14 to 25 mW and Pe/Pw=0.5), and

within the time length $\beta_i T$ (i is an integer within a range of from 1 to m), the recording light of bias power Pb of 0.8 mW irradiates the recording layer.

4. A rewritable optical recording medium according to claim 1 or 2, wherein

after an EFM-modulated signal is recorded by an overwriting operation ten times in the recording layer at a 4-times velocity V as high as 4 times of a reference velocity (1-times velocity) V_1, which is a linear velocity of 1.2 m/s, with a data reference clock period T retained so as to satisfy $VT=V_1T_1$ (where T_1 is 231 ns) under one selected from various conditions of the following recording method 3,

a modulation m_{11} of an eye pattern of the recorded signal obtained as retrieved at the 1-times velocity is 60-80%,

a topmost level R_{top} of reflectivity of the eye pattern of the recorded signal obtained as retrieved at the 1-times

velocity is 15-25%, and

a jitter of the individual amorphous marks and inter-marks obtained as retrieved at the 1-times velocity are equal to or less than 35 ns;

said recording method 3 is carried out by exposing the recording layer to recording light of a 780 nm wavelength via an optical system whose numerical aperture (NA) is 0.55 or 0.5, with the time length of the individual amorphous mark being nT (n is an integer within a range of from 3 to 11), in the following manner:

during that time, erasure power Pe, which is able to crystallize the individual amorphous-state portions, irradiates inter-mark portions between the individual recorded marks,

for the recorded marks, the time length (n-j)T is divided into $\alpha_1 T$, $\beta_1 T$, $\alpha_2 T$, $\beta_2 T$, ..., $\alpha_m T$, $\beta_m T$ (where m=n-1, α_1=0.4, α_i= from 0.15 to 0.25 (i is an integer within a range of from 2 to m), β_m= from 0.25 to 0.75, $\alpha_i+\beta_{i-1}=1.0$ (i is an integer within a range of from 2 to m)) in this sequence so as to satisfy $\Sigma_i(\alpha_i+\beta_i)=n-j$ (j is a real number within a range of from 0 to 2.0),

within the time length $\alpha_i T$ (i is an integer within a range of from 1 to m), the recording light, whose record power Pw is enough to melt said recording layer, irradiates the recording layer (where Pw is 14 to 25 mW and Pe/Pw=0.5), and

within the time length $\beta_i T$ (i is an integer within a

range of from 1 to m), the recording light of bias power Pb of 0.8 mW irradiates the recording layer.

5. A rewritable optical recording medium according to claim 1 or 2, wherein said phase-change recording layer comprises an alloy composition containing an excessive amount of Sb as compared to a eutectic composition of SbTe.

6. A rewritable optical recording medium according to claim 1 or 2, wherein said modulation m_{11} retains 90% or more of its initial value after the lapse of 500 hours under an acceleration test environment of a temperature of 80° C and a relative humidity of 85%.

7. A rewritable optical recording medium according to claim 1 or 2, wherein said recording medium includes, on the wobble-grooved substrate, a lower protective layer, a phase-change recording layer, an upper protective layer, and a reflective layer, said phase-change recording layer comprising one selected from the compositions represented by $M_zGe_y(Sb_xTe_{1-x})_{1-y-z}$ (where $0 \leqq z \leqq 0.1$, $0 < y \leqq 0.1$, $0.72 \leqq x \leqq 0.8$, and M is at least one element selected from the group consisting of In, Ga, Si, Sn, Pb, Pd, Pt, Zn, Au, Ag, Zr, Hf, V, Nb, Ta, Cr, Co, Bi, O, N, S and rare earth metal elements).

8. A rewritable optical recording medium according

to claim 7, wherein a crystal phase of the crystal state comprises a single-phase or a multi-phase structure having a face-centered cubic structure.

9. A rewritable optical recording medium according to claim 1, wherein in the recording at the 8-times velocity,

after a single-period signal composed of a 3T mark (having a time length of 3T where T is a data reference clock period), and a 3T space portion (inter-mark portion having a time length of 3T) is recorded,

another single-period signal composed of an 11T mark (having a time length of 11T) and an 11T space portion (inter-mark portion having a time length of 11T) is overwritten in such a manner that the 3T mark is erased at an erase ratio of 25 dB or higher.

10. A rewritable optical recording medium according to claim 2, wherein in the recording at the 1the 2-times velocity,

after a single-period signal composed of a 3T mark (having a time length of 3T where T is a data reference clock period), and a 3T space portion (inter-mark portion having a time length of 3T) is recorded,

another single-period signal composed of an 11T mark (having a time length of 11T) and an 11T space portion (inter-mark portion having a time length of 11T) is overwritt n in such a manner that the 3T mark is erased in

an erase ratio of 25 dB or higher.

11. A rewritable optical recording medium according to claim 7, wherein said phase-change recording layer is a film having a thickness selected from the range of 10 through 30 nm.

12. A rewritable optical recording medium according to claim 7, wherein said lower protective layer is a film having a thickness selected from the range of 50 through 150 nm.

13. A rewritable optical recording medium according to claim 7, wherein said upper protective layer is a film having a thickness selected from the range of 30 through 60 nm.

14. A rewritable optical recording medium according to claim 7, wherein said reflective layer is a film having a thickness selected from the range of 40 through 300 nm.

15. A rewritable optical recording medium according to claim 7, wherein said phase-change recording layer comprises one selected from the compositions represented by $A^1{}_aA^2{}_bGe_c(Sb_dTe_{1-d})_{1-a-b-c}$ (where $0<a\leqq0.1$, $0<b\leqq0.1$, c<b<a1, $0.02<c\leqq0.2$, $0.72\leqq d\leqq0.8$, and A^1 is at least one element selected from the group consisting of Zn,Pd, Pt, V, Nb, Ta,

Cr, Co, Si, Sn, Pb, Bi, O, N, S and rare earth metal elements, and A^2 is at least one element selected from the group consisting of Ga and In).

16. A rewritable optical recording medium according to claim 7, wherein said reflective layer comprises one selected from the group consisting of Al alloys and Ag alloys.

17. A rewritable optical recording medium according to claim 7, wherein said wobble groove has a wobble signal, whose frequency is modulated by ±1 kHz according to ATIP (absolute time in pre-groove) information with a carrier frequency of approximately 22.05 kHz in terms of the frequency at the 1-times velocity of 1.2 m/s, said ATIP information including at least one of an optimum recording power Pw_0, an optimum erasure power Pe_0, an optimum bias power Pd_0 and a divided-pulse information in accordance with the recording linear velocity.

18. A rewritable optical recording medium according to claim 7, wherein said wobble groove has a wobble signal, whose frequency is modulated by ±1 kHz according to on ATIP information with a carrier frequency of approximately 22.05 kHz in terms of the frequency at the 1-times velocity, and also has clock marks arranged along said wobble groove at a repeating frequency in a range of from 2 to 8 times of

22.05 kHz.

19. A rewritable optical recording medium according to claim 7, wherein said wobble groove has a wobble signal, whose frequency is constant when the linear velocity is constant, and has address information and a synchronization pattern in terms of whether the wobble is modulated in phase or whether a specified position is devoid of wobble.

20. A method of recording EFM-modulated information in terms of different mark lengths on a rewritable disc-shaped optical recording medium having a phase-change recording layer by CLV (constant linear velocity) operation, said method being carried out in the following manner:

when an individual recorded mark has a time length nT (T is the data reference clock period, and n is an integer within a range of from 3 to 11),

recording light of erasure power Pe, which is able to crystallize an amorphous-state portion, irradiates inter-mark portions,

for the recorded marks, the time length (n-j)T is divided into α_1T, β_1T, α_2T, β_2T, ..., α_mT, β_mT (where m=n-1 or m=n-2) in this sequence so as to satisfy $\Sigma_i(\alpha_i+\beta_i)=n-j$ (j is a real number within a range of $0.0 \leqq j \leqq 2.0$), and

the recording light of recording power Pw (Pw>Pe), which is able to melt the recording layer within the time length α_iT ($1 \leqq i \leqq m$), irradiates the recording lay r, and

the recording light of bias power Pb ($0<Pb\leqq 0.5Pe$) within the time length $\beta_i T$ ($1\leqq i\leqq m$) the recording layer to overwrite; and

when a linear velocity within a range of 1.2 m/s to 1.4 m/s is the reference velocity (1-times velocity) and 231 nsec (ns) is a reference clock period,

(1) for the 4-times velocity, α_1= from 0.3 to 1.5, α_i= from 0.2 to 0.7 ($2\leqq i\leqq m$), $\alpha_i+\beta_{i-1}$= from 1 to 1.5 ($3\leqq i\leqq m$),

(2) for the 1- or the 2-times velocity, α_1= from 0.05 to 1.0, α_i= from 0.05 to 0.5 ($2\leqq i\leqq m$), $\alpha_i+\beta_{i-1}$= from 1 to 1.5 ($3\leqq i\leqq m$), and

(3) for any of 6-, 8-, 10- and 12-times velocities, α_1= from 0.3 to 2, α_i= from 0.3 to 1 ($2\leqq i\leqq m$), $\alpha_i+\beta_{i-1}$= from 1 to 1.5 ($3\leqq i\leqq m$).

21. A recording method according to claim 20, wherein for any of the described linear velocity in use,

m is constant,

α_1= approximately 1, α_i= from 0.3 to 0.6 (where i is an integer within a range of from 2 to m), and $\alpha_i+\beta_{i-1}$ is constant (where i is an integer within a range of from 3 to m), and

α_i is monotonically reduced for the lower linear velocity (where i is an integer within a range of from 2 to m).

22. A recording method according to claim 20, wherein for any of the described linear velocity in use, m is constant, and each of $\alpha_1 T$, $\alpha_i T$, and $\alpha_i+\beta_{i-1}$ is constant (where i is an integer within a range of from 3 to m).

23. A recording method according to claim 21, wherein for any of the described linear velocity in use, m is contant, and $\alpha_i+\beta_{i-1}$= approximately 1 for every i (where i is an integer within a range of from 2 to m).

24. A recording method according to claim 23, wherein α_i/α_1= from 0.3 to 0.7 (where i is an integer within a range of from 2 to m).

25. A recording method according to claim 20, wherein for any of the described linear velocity in use, β_m= from 0 to 1.5, and β_m is constant for every linear velocity, or is increased more for the lower linear velocity.

26. A recording method according to claim 20, wherein for any of the described linear velocity in use, each of $\alpha_i T$ ($1\leqq i\leqq m$) and $\beta_i T$ ($1\leqq i\leqq m-1$) is 10 ns or more.

27. A method of recording various mark and inter-

mark lengths in terms of EFM-modulated information on a rewritable disc-shaped optical recording medium having a predetermined recording area by CAV (constant angular velocity) operation, in which the recording medium is rotated at a constant angular velocity, said method being carried out in the following manner:

when a linear velocity within a range of from 1.2 m/s to 1.4 m/s is a reference velocity (1-times velocity), the disc-shaped optical recording medium is rotated in a way that a linear velocity at an outermost periphery of the recording area is as high as 10 times of the reference velocity,

if a time length of an individual recorded mark is nT (T is a data reference clock period varying according to its radial position in a way that a product VT (V is a linear velocity in the radial position) is constant, and n is an integer within a range of from 3 to 11),

recording light of erasure power Pe, which is able to crystallize an amorphous-state portion, irradiates inter-mark portions,

for the recorded marks, the time length (n-j)T is divided into $\alpha_1 T$, $\beta_1 T$, $\alpha_2 T$, $\beta_2 T$, ..., $\alpha_m T$, $\beta_m T$ (where m=n-1, α_1= from 0.75 to 1.25, α_i= from 0.25 to 0.75 ($2 \leqq i \leqq m$), $\alpha_i+\beta_{i-1}$= from 1 to 1.5 ($3 \leqq i \leqq m$)) in this sequence so as to satisfy $\Sigma_i(\alpha_i+\beta_i)=n-j$ (j is a real number within a range of $0.0 \leqq j \leqq 2.0$),

within the time length $\alpha_i T$ ($1 \leqq i \leqq m$), the recording

light, whose record power Pw (Pw>Pe) is enough to melt said recording layer, irradiates the recording layer, and within the time length $\beta_i T$ ($1 \leqq i \leqq m$), the recording light of bias power Pb ($0 < Pb \leqq 0.5Pe$) irradiates the recording layer, and

each of α_i and $\alpha_i + \beta_{i-1}$ (i= from 3 to m) is constant for any radial position, and α_i (i= from 3 to m) is reduced monotonically for the radially inner position.

28. A method of recording various mark and inter-mark lengths in terms of EFM-modulated information on a rewritable disc-shaped optical recording medium having a predetermined recording area by CAV (constant angular velocity) operation, in which the recording medium is rotated at a constant angular velocity, said method being carried out in the following manner:

when a linear velocity within a range of from 1.2 m/s to 1.4 m/s is a reference velocity (1-times velocity), the disc-shaped optical recording medium is rotated in a way that a linear velocity at an outermost periphery of the recording area is as high as 10 times of the reference velocity,

if a time length of an individual recorded mark is nT (T is a data reference clock period varying according to its radial position in a way that a product VT (V is a linear velocity in the radial position is constant, and n is an integer within a range of from 3 to 11),

recording light of erasure power Pe, which is able to

crystallize an amorphous-state portion, irradiates inter-mark portions,

for the recorded marks, the time length (n-j)T is divided into α_1T, β_1T, α_2T, β_2T, ..., α_mT, β_mT (where m=n-1, α_1/α_i= from 0.3 to 0.7 (i is an integer within a range of from 2 to m), $\alpha_i+\beta_{i-1}$= approximately 1 ($3\leqq i\leqq m$)) in this sequence so as to satisfy $\Sigma_i(\alpha_i+\beta_i)=n-j$ (j is a real number within a range of $0.0\leqq j\leqq 2.0$),

within the time length α_iT ($1\leqq i\leqq m$), the recording light, whose record power Pw (Pw>Pe) is enough to melt said recording layer, irradiates the recording layer, and within the time length β_iT ($1\leqq i\leqq m$), the recording light of bias power Pb ($0<Pb\leqq 0.5Pe$) irradiates the recording layer, and

each of α_iT (i = from 2 to m) and $\alpha_i+\beta_{i-1}$ (i= from 3 to m) is constant for any radial position.

29. A recording method according to claim 27 or 28, wherein said recording area is divided into a plurality of virtual zones for every radial position, β_m= from 0 to 1.5, and β_m is monotonically increased for the radially inner zone.

30. A recording method according to claim 27 or 29, wherein said rewritable disc-shaped optical recording medium is a rewritable compact disc (CD-RW) in which at least an radius ranging from 23 to 58 mm is defined as said recording area.

31. A recording method according to claim 27 or 28, wherein each of $\alpha_i T$ $(1 \leqq i \leqq m)$ and $\beta_i T$ $(1 \leqq i \leqq m)$ is 10 ns or more for any radial position.

32. A recording method according to claim 27 or 31, wherein for any linear velocity in use, a value of each of Pb, Pw, and Pe/Pw is substantially constant.

33. A recording method according to claim 27 or 28, wherein

said rewritable disc-shaped optical recording medium has on a substrate a wobble groove having a wobble signal whose frequency is modulated by a starrering of ±1 kHz according to ATIP (absolute time in pre-groove) information with a carrier frequency of approximately 22.05 kHz in terms of the frequency at the 1-times velocity,

said carrier frequency is detected while said rewritable disc-shaped optical recording medium is rotated at a constant angular velocity, and a data reference clock according to a disc radius is obtained by multiplying the detected frequency with 196, and

an ATIP (abosolute time in pre-groove) signal, which is the ATIP information, is detected, and a data reference clock, which is in synchronism with a synchronization pattern in the detected ATIP signal and a disc rotation, is obtained.

34. A recording method according claim 27 or 28, wherein

said rewritable disc-shaped optical recording medium has on a substrate a wobble groove that has a wobble signal, whose frequency is modulated by ±1 kHz according to ATIP information with a carrier frequency of approximately 22.05 kHz in terms of the frequency at the 1-times velocity, and also clock marks arranged along the groove at a repeating frequency in a range of from 2 to 8 times of 22.05 kHz, and

the individual clock mark is detected while said rewritable disc-shaped optical recording medium is rotated at a constant angular velocity, and a data reference clock is obtained by multiplying said repeating frequency of the clock mark with a predetermined multiplier.

35. A recording method according to claim 27 or 28, wherein

said wobble groove has a wobble signal, whose carrier frequency is constant when the linear velocity is constant, and also has address information and a synchronization pattern in terms of whether the wobble is modulated in phase or whether a specified position is devoid of wobble, and

said carrier frequency is detected while said rewritable disc-shaped optical recording medium is rotated at a constant angular velocity, and a data reference clock is obtained by multiplying the detected frequency with a

predetermined multiplier.

36. A recording method according to claim 27 or 28, wherein

said rewritable disc-shaped optical recording medium has absolute time information in terms of a sub-code Q channel signal recorded previously in the entire recording area as an EFM-modulated signal, and

said EFM-modulated signal is detected while said rewritable disc-shaped optical recording medium is rotated at a constant angular velocity, and a data reference lock and address information are obtained from said EFM-modulated signal.

37. A recording method according to claim 27 or 28, wherein

said rewritable disc-shaped optical recording medium has a block data structure according to CD-ROM specifications recorded previously in the entire recording area as EFM-modulated signal, and

said EFM-modulated signal is detected while said rewritable disc-shaped optical recording medium is rotated at a constant angular velocity, and a data reference clock and address information are obtained from the detected EFM-modulated signal.

38. An optical disc recording/retrieving apparatus

comprising:

a motor for rotating a disc, which has a spiral groove with wobble which carrier frequency is constant in space frequency and meandering according to a signal modulated with a constant carrier frequency f_{L0} and address information and also has a recording layer, at a constant angular velocity with a center of the disc being an axis of rotation, the disc having address information identifying each recording data block , which is a unit of recording information located at a specified position in the spiral groove, and a synchronization pattern identifying a head position of the recording data block;

an optical pick-up for generating a focused laser beam irradiating the disc for recording/retrieving;

a linear motor for moving said optical pick-up radially of the disc to a given address;

a focus servo circuit for focusing the focused laser beam on the recording layer;

a groove tracking servo circuit for scanning the spiral groove by the focused laser beam;

a detector and decoder circuit for detecting and decoding a carrier frequency f_{A0}, address information and block synchronization signal from the meandering groove geometry;

a data-sequence generation circuit for generating a recording data sequence, which is modulated in terms of mark length modulation, in synchronism with a data reference

clock T which has a frequency f_{d0} and a start position of the recording block;

a laser-power modulation circuit for modulating a recording laser power in accordance with the recording data sequence;

a reference signal generator for generating a data reference clock T which varies in reverse proportion to a radius position when the focused laser beam is moved radially of the disc to a given address recording block; and

a data-sequence synchronization circuit for synchronizing a data sequence, which is to be written in the given recording block, with the start position of the recording block by comparing in phase between a reference signal f_{R0}, which is obtained by dividing the data reference clock at a particular radius by N (N is an integer), and the carrier frequency f_{A0}, which is detected at the given address from the meandering groove geometry, and also making a fine adjustment of r.p.m. (revolutions per minute) of the disc so as to satisfy a relation $f_{d0}=N \cdot f_{A0}$.

39. An optical disc recording/retrieving apparatus according to claim 38, wherein the frequency f_{d0} of the reference clock T at a particular address is varied according to the radius so as to satisfy a relation:

$$f_{d0}=f_{ref}+(R-R_{ref})/\Delta R$$

where f_{ref} is th frequency of a data r ference clock T_{ref}

for a reference radius R_{ref} at the head or tail of the recording area of the optical disc, ΔR is a radial width of the recording medium from an innermost periphery to an outermost periphery, and R is a radius calculated from a given address at which object data is to be recorded.

40. An optical disc recording/retrieving apparatus according to claim 38, wherein within a range in which r.p.m. of the disc is adjusted is within $\pm 0.01\ \omega_0$ with respect to a reference r.p.m. ω_0.

41. An optical disc recording/retrieving apparatus according to claim 38, wherein the carrier frequency f_{L0} of the flowchart groove geometry is 22.05 kHz, the address information is an ATIP (absolute time in pre-groove) signal whose frequency is modulated by ±1 kHz with the carrier frequency f_{L0}, and ω_0 is within a range of from 1900 to 2200 r.p.m.

42. An optical disc recording/retrieving medium wherein recording of data to an information area is made at a constant angular velocity, irrespective of the radial position where the recording takes place.

43. An optical disc recording/retrieving method wherein recording and retrieving to and from an information area are made each at a constant angular velocity.

44. An optical disc recording/retrieving method wherein recording and retrieving to and from an information area are made at the same angular velocity.

45. A rewritable optical recording medium according to claim 1 or 2, wherein

an application area includes an application program area occupying a continuous specified part of the application area and storing a predetermined application program, and a user data area which occupies the remaining portion of the application area and in which the user data relating to at least the application program is adapted to be recorded; and

retrieving of the application program and recording of the user data relating to the application program are made each at a constant angular velocity.

46. A rewritable optical recording medium according to claim 45, wherein the application program and the user data are recorded in fixed-length packet units each having a common file management structure for both the application program and the user data.

47. A recording/retrieving apparatus for performing recording and retrieving on a rewritable optical recording medium having an application ar a that includes an

application program area occupying a continuous specified part of the application area and storing a predetermined application program, and a user data area which occupies the remaining portion of the application area and in which user data relating to at least the application program is adapted to be recorded, the application program and the user data being recorded in fixed-length packet units each having a common file management structure for both the application program and the user data, and retrieving of the application program and recording of the user data relating to the application program being made each at a constant angular velocity (CAV), said apparatus comprising:

program executing means for executing the application program content by having access to the specified part of the application program in the rewritable optical recording medium to retrieve the application program data with keeping the medium, which is in the form of a disc, in CAV rotation at a first predetermined angular velocity;

information input means for inputting necessary information according to the application program to be executed by said program executing means; and

recording means for having access to the user data area with keeping the disc in CAV rotation at a second predetermined angular velocity and for recording in the user data area the necessary information, which is inputted by said information input m ans, as user data.

48. A recording/retrieving apparatus according to claim 47, further comprising information input offer means for retrieving a predetermined demonstration, during the execution of the application program, to offer whether the user should make information input in response to the demonstration.